

WHAT IS CLAIMED IS:

1. A movable robot comprising:
  - a main body unit; and
  - 5 at least three wheel units connected with the main body unit and having respective contact portions for contact with a floor surface, the contact portions being rotatable about respective axes;
    - wherein the main body unit moves along the floor surface as the contact portions rotate, and wherein lines projected onto the floor surface
    - 10 and originating from the axes of rotation of the contact portions are spaced at substantially equal angular intervals, and at most two of the axes are on a common plane;
    - wherein each of the wheel units comprises:
      - 1) a motor base;
      - 2) a rotation drive motor supported on the motor base;
      - 15 3) a casing being rotatable relative to the motor base about related one of the axes and having related one of the contact portions; and
      - 4) a rotational force transmission device connected between the rotation drive motor and the casing for transmitting a rotational force
    - 20 generated by the rotation drive motor to the casing.
  2. A movable robot as recited in claim 1, wherein the rotational force transmission device comprises a first gear connected with an output shaft of the rotation drive motor, and a second gear meshing with the first gear and being integral with the casing.
  3. A movable robot as recited in claim 1, wherein each of the wheel

units further comprises a wheel including the motor base and the casing, and a leg connecting the wheel and the main body unit and being expandible and contractible in a direction of related one of the axes.

5     4.     A movable robot as recited in claim 3, wherein each of the wheel units further comprises a leg drive motor supported on the motor base, and a motion converting device connected between the leg drive motor and the leg for converting a rotational force generated by the leg drive motor into a linear force and applying the linear force to the leg to expand and contract  
10    the leg.

5.     A movable robot as recited in claim 1, wherein the main body unit comprises:

15    an external condition sensor for detecting a condition of a region external with respect to the main body unit;

      an output device for outputting information to an external device;

      a memory storing a control program for implementing prescribed processing in response to the external condition detected by the external condition sensor; and

20    a controller for deciding contents of information to be outputted from the output device and also contents of control of the rotation drive motor on the basis of the control program and the external condition detected by the external condition sensor, and for controlling the output device and the rotation drive motor in accordance with the decided contents of information  
25    to be outputted from the output device and also the decided contents of control of the rotation drive motor.

6. A movable robot as recited in claim 4, wherein the main body unit comprises:

an external condition sensor for detecting a condition of a region external with respect to the main body unit;

5 an output device for outputting information to an external device;

a memory storing a control program for implementing prescribed processing in response to the external condition detected by the external condition sensor; and

10 a controller for deciding contents of information to be outputted from the output device and also contents of control of the leg drive motor on the basis of the control program and the external condition detected by the external condition sensor, and for controlling the output device and the leg drive motor in accordance with the decided contents of information to be outputted from the output device and also the decided contents of control of 15 the leg drive motor.

7. A movable robot comprising:

20 a drive unit including at least three wheel units having respective contact portions for contact with a floor surface, the contact portions being rotatable about respective axes, the wheel units including drive devices for rotating the contact portions respectively; and

25 a sub unit detachably connected with the drive unit and including at least one of 1) an external condition sensor for detecting a condition of a region external with respect to the sub unit, 2) an output device for outputting information to an external device, 3) a communication device for implementing communication with an external device, and 4) a controller for controlling the drive unit;

wherein the drive unit moves along the floor surface as the contact portions rotate, and wherein lines projected onto the floor surface and originating from the axes of rotation of the contact portions are spaced at substantially equal angular intervals, and at most two of the axes are on a  
5 common plane.

8. A movable robot as recited in claim 7, wherein each of the wheel units comprises a casing, a wheel having related one of the contact portions and being rotatable about related one of the axes, a leg connecting the  
10 casing and the wheel and being expandible and contractible in a direction of related one of the axes, and a drive device for expanding and contracting the leg.

9. A movable robot as recited in claim 5, wherein the controller  
15 comprises a first sub controller for deciding contents of control of the rotation drive motor on the basis of the control program and the external condition detected by the external condition sensor, and a second sub controller for controlling the rotation drive motor in accordance with the decided contents of control of the rotation drive motor.